

Title (en)

A phase locked loop frequency synthesizer circuit with improved noise performance

Title (de)

Phasenregelkreis-Frequenzgeneratorschaltung mit verbesserter Rauschleistung

Title (fr)

Circuit de synthétiseur de fréquence à boucle fermée de phase avec une performance améliorée de bruit

Publication

**EP 2326011 A1 20110525 (EN)**

Application

**EP 09176834 A 20091124**

Priority

EP 09176834 A 20091124

Abstract (en)

A phase locked loop frequency synthesizer comprises a voltage controlled oscillator; a loop filter for supplying a control voltage to the oscillator; a phase frequency detector arranged to detect a phase difference between a reference signal and a feedback signal generated from the oscillator signal and generate pulses on detector signals (UP/DN) dependent on the sign of the phase difference; and a charge pump (61) comprising current generating means and controlled switches (64, 65) arranged to convert pulses on the detector signals to current pulses from a reference voltage (V<sub>dd</sub>) to a common terminal (V<sub>loop</sub>) connected to the loop filter or to current pulses from the common terminal to ground. The current generating means comprises at least one resistor (62, 63) connected between the common terminal and the switches, and the charge pump comprises an operational amplifier (66) coupled to keep the reference voltage at twice the voltage at the common terminal.

IPC 8 full level

**H03L 7/197** (2006.01); **H03L 7/089** (2006.01)

CPC (source: EP US)

**H03L 7/0891** (2013.01 - EP US); **H03L 7/0895** (2013.01 - EP US); **H03L 7/1976** (2013.01 - EP US)

Citation (applicant)

BROWNLEE ET AL.: "A 0.5 to 2.5GHz PLL with Fully Differential Supply-Regulated Tuning", PROC. ISSCC, 2006, pages 588 - 589

Citation (search report)

- [A] US 5703511 A 19971230 - OKAMOTO MASAOKI [JP]
- [A] EP 1292032 A1 20030312 - MITSUBISHI ELECTRIC CORP [JP]
- [A] US 2008100352 A1 20080501 - PARK JAE-JIN [KR]

Cited by

CN112362976A

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR

Designated extension state (EPC)

AL BA RS

DOCDB simple family (publication)

**EP 2326011 A1 20110525**; **EP 2326011 B1 20120620**; US 2012274372 A1 20121101; US 8638143 B2 20140128; WO 2011064122 A1 20110603

DOCDB simple family (application)

**EP 09176834 A 20091124**; EP 2010067557 W 20101116; US 201013511603 A 20101116